Emerging Issues About Biofuels Under EPA's Emergency Response Program

Case Studies: Example from Region 5

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Region 5

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Region 5 Case Studies

- There have been an increasing number of incidents in R5
- These case studies highlight issues encountered and lessons learned
- Issues can vary from spill to spill
- Some issues seem consistent regardless of the variables

Region 5 Case Studies (cont'd)

- **Basics of biofuels response in R5 and what we have learned**
  - The amount of feedstock and product greatly varies
  - The types of material on hand at production varies
  - Location of production facilities can be surprising
  - Generator knowledge is unpredictable

Region 5 Case Studies (cont'd)

- **Examples from 3 states will be provided**
  - Ohio
  - Indiana
  - Michigan

Ohio Case Studies

Up first the Buckeyes!

Defiance Biofuel Spill

Woods Ethanol Spill

Defiance Biofuel Spill (cont'd)

- **Initial report called in to state: *COMPANY HAD AN EXPLOSION. THERE ARE 2 LARGE TANKS ON SITE CONTAINING GYLCERIN. SEWER BEING IMPACTED WITH FF WATER***
- **OHIO EPA OSC responded**
- **2 tanks were in fire (10,000 gallons & 4,000 gallons)**
  - Only 1650 gallons of glycerin reported on hand
  - Also ~700 gallons of biodiesel
  - "Empty" 55-gallon drums
- **Release to ground and storm sewer**
- **Release to threatened creek and river via storm sewer**

Defiance Biofuel Spill (cont'd)

Fire and release point

Defiance Biofuel Spill (cont'd)

Ohio EPA responded and assessed situation

- Called EPA spill phone duty officer
- Duty officer coordinated with OSC
- Both told Ohio EPA to respond as if diesel spill
- Were not sure what regulations applied to biodiesel production
  - Both continued research that night
  - Advised state on limited info obtained
- Ohio determined spill contained, but not cleaned up
- They decided to wait till morning for removal

Defiance Biodiesel Spill (cont'd)

-"fats" floated

- 3 layers in water observed

- some suspended in water

-"milky" layer observed

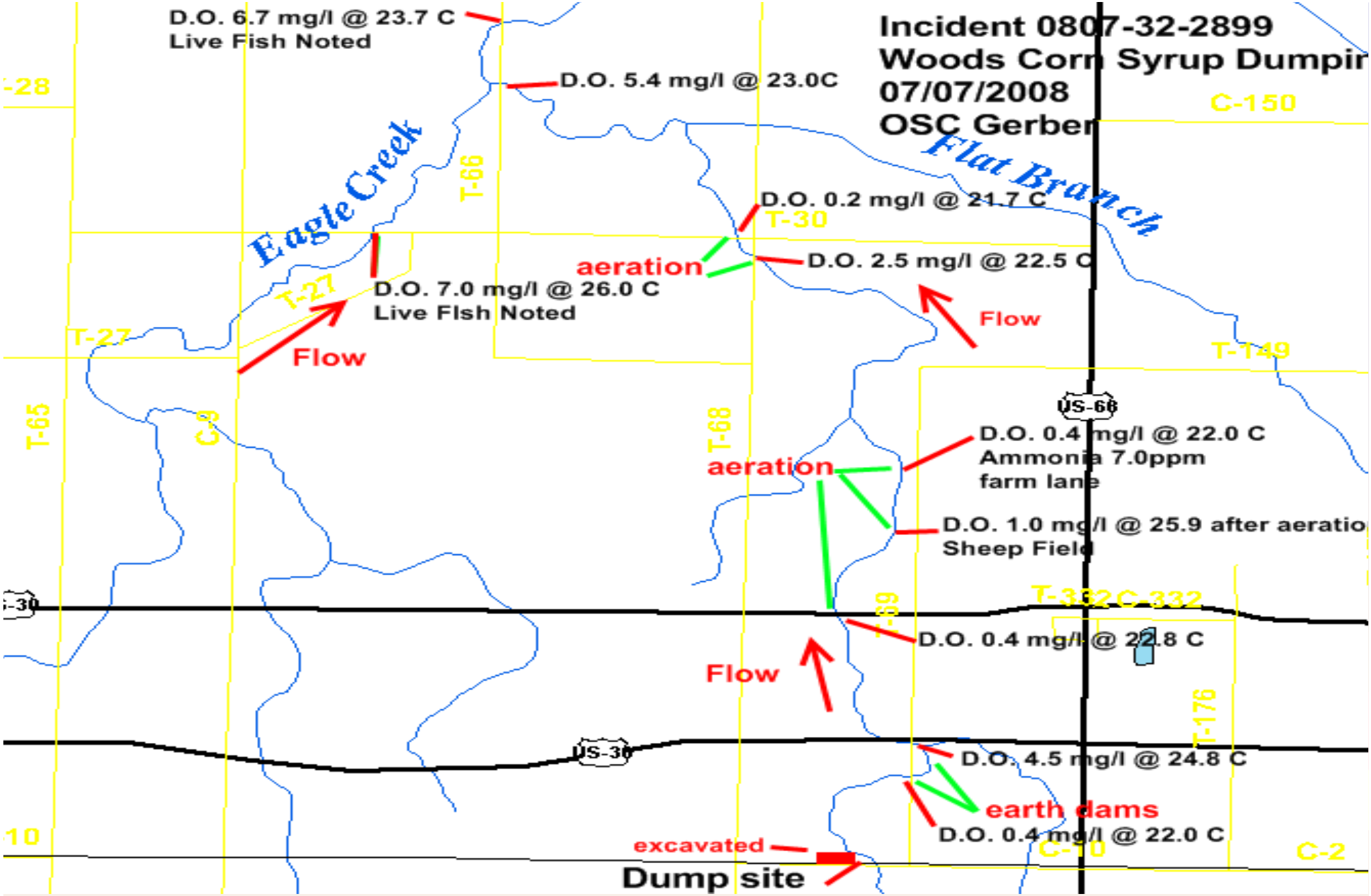
Defiance Biodiesel Spill (cont'd)

Response Techniques

- Ohio EPA made PRP hire a contractor
- On-land spills were excavated
- Spill to ditch was collected and put in frac tanks
  - Analytical of frac tank water revealed styrene and perchloroethylene
  - Shows more than "glycerin" spilled
- Some wastes suspended in water column were lost

Woods Ethanol Spill

- July 7, 2008-Report from Hancock Co. EMA of yellow substance in a roadside ditch
- Owner of adjacent property dumped 5,000 gallons of CDLS (byproduct of ethanol production) to feed wildlife on his property
- Corn distiller was rejected at treatment facility and sold to local farmer to feed deer
- Ethanol Plant on-site to provide “Technical Assistance”
- ODNR discovers up to 1,000 dead fish downstream of spill site
- PRP hired an environmental contractor to
  - Remove gross contamination from spill site
  - Provide aeration to tributary
  - Remove dead fish from downstream
  - Dispose of contaminated soil
- Direct reading in tributary showed
  - DO Levels @ 0 mg/L
  - Ammonia @ 30 mg/L


D.O. 6.7 mg/l @ 23.7 C
Live Fish Noted
D.O. 5.4 mg/l @ 23.0C
Incident 0807-32-2899
Woods Corn Syrup Dumpir
07/07/2008
OSC Gerber
C-150
Eagle Creek
Flat Branch
T-66
D.O. 0.2 mg/l @ 21.7 C
T-30
aeration
D.O. 2.5 mg/l @ 22.5 C
D.O. 7.0 mg/l @ 26.0 C
Live Flsh Noted
T-27
Flow
Flow
T-149
US-66
T-65
C-3
T-68
D.O. 0.4 mg/l @ 22.0 C
Ammonia 7.0ppm
farm lane
aeration
D.O. 1.0 mg/l @ 25.9 after aeratio
Sheep Field
T-332
C-332
D.O. 0.4 mg/l @ 22.8 C
Flow
T-176
US-30
D.O. 4.5 mg/l @ 24.8 C
earth dams
D.O. 0.4 mg/l @ 22.0 C
excavated
Dump site
C-10
C-2

Woods Ethanol Spill (cont'd)

Woods Ethanol Spill (cont'd)

Woods Ethanol Spill (cont'd)

Woods Ethanol Spill (cont'd)

Woods Ethanol Spill (cont'd)

Woods Ethanol Spill (cont'd)

Indiana Case Studies

Hoosier Time!

Indiana Spill at “Renewable” Energy Resources

Private Garage Spill

Renewable Energy (cont'd)

- Biofuels production facility
- Spill from 50,000 gallon tank
- Surface soils and ditch water impacted
- Water in ditch a "milky" white *(heard that before?)*
- Soils excavated
- Tile field drains intercepted and plugged

Renewable Energy (cont'd)

- note "milky" water

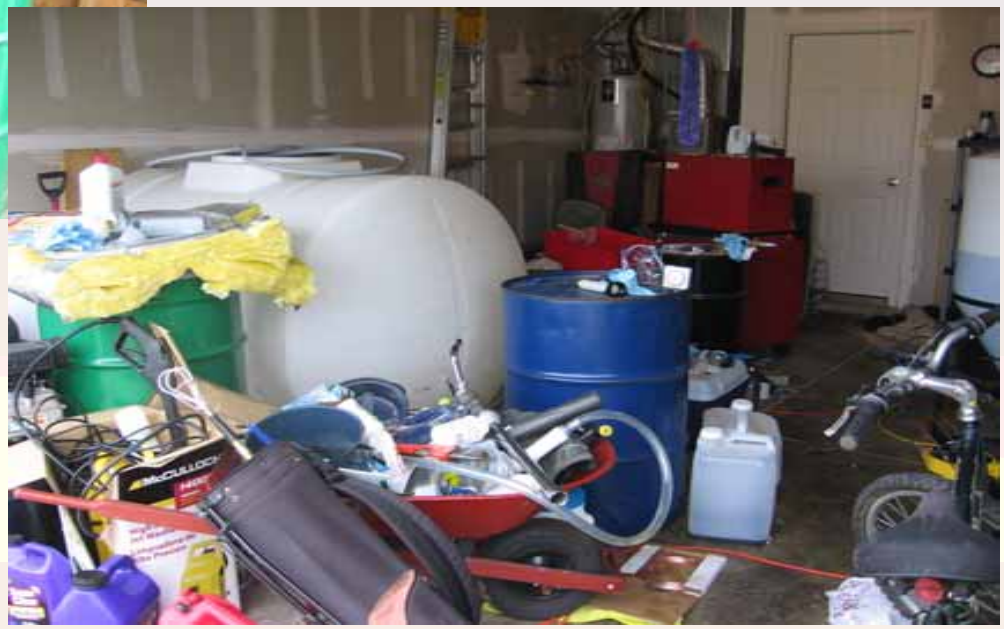
- normal fuel spill techniques not effective after initial spill

- ability of surface cleanup not really a viable option

Private Garage

- Small scale production
- Used vegetable oil
- No tanks large enough for regulation
- However, 20 gallons spilled, some to sewer
- IDEM advised resident on contingency plans and contractors

Private Garage (cont'd)



Michigan Case Study

The Wolverines turn!

Paint Shop

Paint Shop

- Reported as small biodiesel spill
- Actually a paint shop
- USCG was in area and offered to check on spill
- USCG and MDEQ met on site
  - Small spill observed
  - Did not see any coming out of sewer
- USCG left, conditions changed
- MDEQ noted emerging issues at shift change

Paint Shop (cont'd)

- Noted entering waterway, low flow
- "Milky" white throughout the water column
- MDEQ and EPA discussed options
- Capture and removal not possible
  - Little impact to fish observed
  - Conditions did not change much due to no flow
- Decided to purge ditch and flush
- Flushing somewhat effective
- Heavy rains completed the flushing

Paint Shop (cont'd)

Lessons Learned

- Biofuel production can be anywhere
- “Manufacturers” are heavily ignorant of regulations
- In R5, many facilities are being abandoned or going bankrupt due to market fluctuations
- Glycerin spills seem to be prevalent
  - Output from the transesterification
  - Not that much use for it as product
  - People are storing it and not disposing of it
  - Some waiting for “value” to increase

Lessons Learned (cont'd)

- Biofuels degrade faster
- Causes extreme DO issues in creeks
- Not great for water treatment plants
- Other removal/cleanup techniques
  - Any ideas for treating "in stream" besides aeration?
  - Other sorbent technologies?
- Fast degradation can make cleanups faster
- Biofuel spills are many times not biodiesel or ethanol, but production products and byproducts